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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,346	08/14/2001	Yoshiaki Yamauchi	520.40496X00	6680

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EXAMINER

CHEN, TIANJIE

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 11/25/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,346

Applicant(s)

YAMAUCHI ET AL.

Examiner

Tianjie Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7-9 is/are rejected.
- 7) ☒ Claim(s) 2,3,5 and 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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Non-Final Rejection

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claims 1, 4, 7, 8, and 9 are objected to because of the following informalities:
In claim 1, line 19; claim 4, line 21; claim 7, line 22; claim 8, line 11; and claim 9, line 13; "an" should be changed to --said--; respectively.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takamori (US 4,769,806) in View of Mueller (US 6,611,540) and Reece (US 5,565,674).

With regard to claims 1 and 8, Takamori shows a disc driving apparatus (Column 1, lines 10-12), including: an inherent housing of a disc drive; a rotation mechanism disposed within the housing for rotating a disc 28 (Fig. 1, 4, line 45); an optical pickup mechanism disposed within the housing for reproducing or reproducing/recording information on the disc; wherein the optical pickup mechanism has an optical pickup 12-20 (Fig. 1) and a driving mechanism 23b (Column 4, lines 46-48) for driving the optical pickup in a radial direction of the disc; the optical pickup

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includes a pickup housing 11 made of metal (Column 3, lines 31-33), in which are mounted a laser diode 12 (Column 3, line 35) emitting detection light for reproducing or recording information on the disc, an objective lens driver 23a and 23b (Column 4, lines 46-48) for guiding the detection light emitted from to a predetermined position on the disc and for guiding reflection light from the disc onto an optical detector, optical parts including a lens 19 (Fig. 1, column 4, line 25), a prism 14, a mirror 16 (Column 4, lines 12-13), and an optical detector 20 (Column 4, line 28) for detecting the detection light (Column 4, lines 39-40); and an inherent laser driver circuit board for controlling the laser diode.

Takamori does not show the detail of forming the laser driver circuit board, and that the laser diode and the laser driver circuit board are mounted in thermal contact with the pickup housing so as to be disposed adjacent to each other, while providing a thermal separation portion for thermally separating the laser diode and the laser driver circuit board.

Mueller shows that integration of drive circuit board and laser diode permits the minimization of lead inductance between the output of the driver and the diode terminals (Column 2, lines 54-58). However, Mueller does not specify the way of integration. Reece shows an optical assembly wherein the photoelectronic elements and the circuit 30 are integrated on a single substrate 40 (Column 4, lines 11-44).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to integrate the photoelectronic elements, which would include laser diode, and the electric circuit, which would include the diode drive circuit board, onto a single substrate as taught by Mueller and Reece. The rationale is as follows: Takamori shows a device having a laser diode, which inherits a diode driver circuit

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board but is not shown explicitly. Mueller teaches that the integration would minimize the inductance, and Reece teaches a way of doing the integration. One of ordinary skill in the art, who has been looking for the detail of the driver circuit to finishing the design, would have been motivated to follow Mueller and Reece's teaching to do the integration to minimize the inductance. Reece further shows that in such constructed device, the optical component, which would include laser diode, and the electric components, which would include laser driver circuit board, are mounted in thermal contact with the pickup housing so as to be disposed adjacent to each other, while providing a thermal separation portion for thermally separating the laser diode and the laser driver circuit board (Column 2, lines 54-57).

4. Claims 4, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takamori in View of Mueller, Reece, and Asoma (US 6,459,672).

With regard to claims 4, 7, and 9; Takamori, Mueller, and Reece show a device as described above, wherein a laser diode for emitting detection light for use with a CD, but fails to show a laser diode for emitting a detection light for use with a DVD

Asoma shows an apparatus, which includes an additional laser diode B (Fig. 3; column 5, lines 17-19) for emitting a detection light for use with a DVD.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to add the laser B into Takamori's device. The rationale is as follows: Asoma teaches that by adding the laser, the device could be adapted for coping with plurality optical recording mediums of different kinds (Column 2, lines 9-11). One of ordinary skill in the art would have been motivated to add the second laser for coping with a plurality of recording mediums.

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With regard to claims 7 and 9, Takamori further shows that the pickup housing 11 (Fig. 1) is defined by a sidewall formed all around the periphery thereof and a bottom wall, and Reeley further shows the laser diodes for use with a CD and a DVD, the laser driver circuit board and the objective lens driver are mounted therein in thermal contact with the pickup housing through metal sheet B and C (Fig. 3; column 3, lines 45-50), wherein the laser diode for use with a CD and the laser driver circuit board are disposed so as to be adjacent to each other since they are integrated together to minimize the inductance.

Allowable Subject Matter

5. Claims 2, 3, 5, and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

- With regard to claim 2, as the closest reference, the combination of Takamori (US 4,769,806), Mueller (US 6,611,540) and Reeley (US 5,565,674) shows a disc driving apparatus, wherein the laser diode and the laser driver circuit board are mounted in thermal contact with the pickup housing so as to be disposed adjacent to each other, while providing a thermal separation portion for thermally separating the laser diode and the laser driver circuit board; **but fails to show** the thermal separation portion includes a dividing portion formed with either one of a slit portion or a recess gutter, for dividing the pickup housing, disposed between the laser diode and the laser driver circuit board, and a heat separation member disposed in the dividing portion.

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- With regard to claims 5 and 6, as the closest reference, the combination of Takamori (US 4,769,806), Mueller (US 6,611,540), Reece (US 5,565,674), and Asoma (US 6,459,672) shows a disc driving apparatus, wherein the laser diode and the laser driver circuit board are mounted in thermal contact with the pickup housing so as to be disposed adjacent to each other, while providing a thermal separation portion for thermally separating the laser diode and the laser driver circuit board; **but fails to show** the prism and the mirror of the optical portions and the optical detector are disposed nearer to the laser diodes for use with a CD and DVD than to the thermal separation portion (Claim 5) and the thermal separation portion is provided so as to thermally separate either one of between the laser diode for use of the CD and the laser diode for use of the DVD, and between the laser driver circuit board and the objective lens driver (Claim 6).
- Applicant asserts that the device with above structure would reduce the thermal interference between heat-generating elements disposed in close proximity with each other, in particular, in the pickup, so as to enable protection of the heat-generating elements from deterioration leading to reduction in the lifetime thereof, and improve the accuracy of reproducing or reproducing/recording (Specification, p. 4, line 21 to p. 5, line 2).

Conclusion

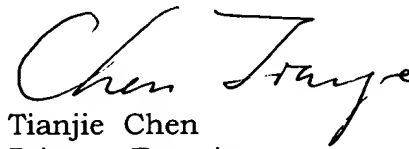
7. The prior art made of record in PTO-892 Form and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is (703) 305-7499. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703)746-6037.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.



Tianjie Chen
Primary Examiner
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11/20/2003